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MATERIAL CIVILIZATION, SPIRITUAL CIVILIZATION AND SOMATIC SCIENCE

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Human civilization includes two major portions, material civilization and spiritual civilization. This is the result of mankind's reforming the objective world and the subjective world. The building of civilization in the spirit of socialism is divided into two aspects, cultural construction and ideological construction. Cultural construction refers to the development of education, science, literature, arts, news, publishing, health, physical education and other cultural matters and improving the level of knowledge of the people. Ideological construction refers to the Marxist view of the world and scientific theories, Communist ideology, beliefs and morals. Socialist culture is the objective manifestation of spiritual civilization. Socialist ideology is the subjective manifestation of spiritual civilization.

Science and technology is a major factor in promoting material civilization and spiritual civilization. Somatic science research involves the spiritual and the material, the subjective and the objective, the relationship between consciousness and the brain. It has formed a new system which includes Marxist philosophy, social science and the various natural sciences. It is a direct major factor in the promotion of spiritual civilization and material civilization.

SOMATIC SCIENCE AND MATERIAL CIVILIZATION

Modern science and technology has in general gone through three developmental stages. From the middle of the 18th century to the beginning of the industrial revolution at the end of the 18th century can be called the beginning stage of modern science and technology. Such men as Descartes and Newton laid the foundation of modern science. The second period, from the beginning of the industrial revolution in the late 18th century to this century was the maturation period of science and technology. It was during this period that the three great inventions of the 19th century appeared - the theory of evolution, the theory of cells and the law of the conservation of energy. At the same time, a series of classical scientific theories in such fields as dynamics, heat, light, electricity, chemistry, biology and geology developed to maturity, basically forming the body of modern science and technology. The third period, from the beginning of this century to the present day is the period of tremendous developments in science and technology. Mankind hopes that the 21st century will become the century of peaceful development, but economic and technical competition is still very fierce.

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I. LOOKING TOWARD THE SCIENCE AND TECHNOLOGY DEVELOPMENTS OF THE 21ST CENTURY, IT IS POSSIBLE THAT THEY WILL BE CHARACTERIZED AS FOLLOWS

1. It will be characterized by the rapid development of science and technology. The world's scientific and technologically advanced nations will concentrate their manpower, materials and wealth on currently advanced science and technology. At the same time, new major breakthroughs may occur in the current level of scientific and technological development in a series of scientific and technological fields. New scientific theories will also appear, and there will be new knowledge of the natural phenomena of the universe. This will deeply affect the development of the world's production. There will be new production techniques, new types of biological products, new synthetic materials, new information, energy and communications structures. New changes will occur because of this in people's ideas and concepts, production methods, social order and life styles.

2. It will be characterized by science and technology closely tied to economic development. Economic development will become much more dependent upon science and technology. The make up of commercial products will include technological factors, technological discoveries will include scientific factors which will be concentrated to a great degree. There will also be changes in the division between science and technology. There will be crossovers and overlapping between the fields of basic research, applied research and technological development. The time in which scientific and technological discoveries are converted into commercial products will be greatly shortened.

3. It will be characterized by science and technology which will develop high technology and accelerate high technology industries. The development of high technology will determine the world ranking of every country in the world in the next century. What we call high technology refers to the establishment on the basis of comprehensive scientific research, new technology groups on the leading edge of modern science and technology, which will play a major role in development of productive forces and promoting social civilization. They are clearly strategic, risky, and tend to proliferate and permeate. They require concentrated knowledge, concentrated investments and advanced management. Hi-Tech Industry uses high technology achievements as the primary technology and resource investment to produce goods of high value.

4. It will be characterized by science and technology which will exist worldwide. Because modern science and technology is the basis on which the newest scientific and technological achievements of the world are developed, the greater the degree of concentration of technology, the more and more complex technological development will become and the more multifarious it will become. There is no country in the world which can

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of its own efforts develop and solve all technology. A number of major problems affecting the society of man such as environment and resources are already world wide problems. The trend toward a world wide division of labor and cooperation in science and technology is becoming more and more accepted. The world will be one of mutual reliance and mutual competition.

5. It will be characterized by science and technology where science and technology, economics and the environment will become more and more coordinated in their development. For a country, the degree of modernization of its society will not only be manifest in its degree of economic and scientific and technological development, but will also be manifest in the coordinated development of its society, environment, education and culture. Throughout time, science and technology has brought mankind great benefits, making tremendous advancements possible in human society. However, advancements in science and technology have also caused changes in the relationship between man and nature. Since the industrial revolution, man has recognized that science and technology are means of overcoming nature, managing nature and controlling nature. Because the developments of science and technology have brought increased knowledge to mankind and expansion of his field of activities, human culture and life have also quickly improved. And on another hand they have also presented mankind with new problems. Some of these are an increased burden on the environment on a world wide scale, rapid depletion of usable resources and a dramatic rise in energy consumption. Although so far there have been all sorts of efforts and partial solutions, but there has still been no change in the basic direction. Therefore, when considering scientific and technical developments in the 21st century, there must be some basic changes in the traditional system of science and technology. Japan was first to emphasize and to propose research into a new human field, which drew world wide attention. We believe that we should pay attention to studying life sciences, human sciences and thought sciences from the viewpoint of somatic science. Research into the various abilities of animals and humans should clarify the basic abilities of bodies, the best forms of achieving material exchange mechanisms, movement mechanisms, immune abilities, self healing abilities, awareness, memory and thought and judgement. People have attempted through various means to simulate artificial life, to produce high capability products which consume little energy and create little waste. They hope to create a new science and new production systems to coordinate between man and nature.

II. THE BREAKTHROUGHS OF SOMATIC SCIENCE WILL LEAD TO A NEW SCIENTIFIC AND TECHNOLOGICAL REVOLUTION, CREATING A NEW MATERIAL CULTURE FOR MANKIND

Man is an extremely complex giant system. This giant system is also open, with material, energy and informational exchanges with the surrounding environment and the universe. Therefore, it may be said that man and the environment, man and the universe, form a super giant system. According to system sciences and the principles of system theory, to

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understand such a complex material system and to clarify the abilities of the system, it is necessary to use the methods of the reduction theory, to separate each level. However, this is not enough. It is necessary to use the concept of the theory of the whole to understand the multiple level structure and the different functions of the different levels formed by the giant system of the human body. It is necessary to combine the reduction theory and system theory to comprehensively study the complex giant system of the human body which is open to the environment and to the universe. This is the philosophical idea of the concept of man and nature in the research of somatic science. There are three parts to the concept of man and nature. The universal view of man and nature, the macroscopic view of man and nature and the microscopic view of man and nature.

1. The first part, the universal view of man and nature. This considers man within the universe. It emphasizes that man's existence or appearance is related to practical evolution, or this may be turned around to state that the reality of the existence of the universe is a necessary condition for the existence of man. Carter pointed out: The evolution of the universe over its process of several billion years, had many possibilities. There were many branching out points. Why did it only take the path the universe actually followed? If the evolution of the universe had not taken the current path, then the appearance of life in this world, including mankind, would not have been very probable. All of the universal physical parameters which we know determined the evolution of the universe and physical parameters which determine the movement of mass are all necessary for the appearance of man. It may also be stated that man appeared because of reality. Therefore the nature of the universe must be like this. In other words, from the nature of matter, man and the universe, or man and the solar system, or the Milky Way and the entire solar system are all connected. This is the universal concept of man and nature. This field has its basic physical concepts, its ruler of ten billion light years, and must use the broad definition of the theory of relativity.

2. The second part, the macroscopic view of man and nature. This investigates the relationship between the inside of the human body and the environment. In this field, it is necessary to use Newtonian physics. It was greatly emphasized by Chinese traditional philosophy and Chinese traditional medicine. Modern environmental medicine is also another part of this. However, it is one sided. It only studies the affects of the environment on the human body and ignores the effects of the human body on the environment. This ignores the fact that the environment and man at this macroscopic scale is a giant system type relationship, and even more, does not use the methods of system sciences to study this relationship.

3. The third part, the microscopic view of man and nature. Investigating man and the environment at the microscopic level, or what is the quantum mechanics level, the mutual effects between man and the universe is called the microscopic view of man and nature. Its yardstick is generally within the range of 10 to the power of negative 12

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centimeters. The microscopic view of man and nature began with the theory of measurements of quantum mechanics. The theoretical system proposed by quantum mechanics, if specifically used to measure the objective world, will not fit into the traditional concepts. Because of this, Einstein was not completely satisfied with quantum physics and proposed the hypothesis of hidden parameters. This was that the movement of matter could still fit into classical measurements, but could there could also be some hidden parameters which were not yet known in addition to known mass motion parameters. However, the results of research over the past twenty years does not support the theory of hidden parameters but supports the theories of quantum physics instead. How then is the problem of measurement to be resolved? Some people favor using the macroscopic characteristics of measurement instruments and adding the quantum statistical mechanics to solve this problem. This is using the characteristic of slow reaction of "actual" instruments. From the viewpoint of the concept of man and nature, so called "actual" instruments are still imaginary instruments, and what are really instruments are the sensual organs through which man knows the objective world. Furthermore, the nerve elements inside the sensory organs and the brain that processes the information is a microscopic, quantum mechanical process. The result of the brain processing senses is the measurement of human recognition, human recognition of the objective world. Therefore, to thoroughly resolve the problems of quantum mechanics, it is necessary to use the human sensory system as the measurement instruments and not imaginary instruments. This is the advancement of human recognition to the microscopic level, to the quantum mechanics level. It can be called quantum epistemology. On the other hand, according to the theories of somatic science, there can be interaction between the human body and the objective environment at the microscopic level or the quantum mechanics level. Therefore, the use of these theories and concepts to study the microscopic relationship between man and the environment is microscopic view of the concept of man and nature.

III. SOMATIC SCIENCE IS THE STUDY OF THE FUNCTION STATES OF THE SYSTEMS WHICH EXIST BETWEEN THE COMPLEX GIANT SYSTEM OF THE HUMAN BODY AND ITS OBJECTIVE ENVIRONMENT, THE STRUCTURE OF THE SYSTEMS AND THE FUNCTIONS (BEHAVIORAL EFFECTS)

Somatic science can use the theories and methods of system sciences to describe the basic characteristics of the complex giant system of the human body, which are the functional states manifested by the human body within a certain period of time. Human functional states are quasistable states. They are stable states which correspond to the phase space in which they exist. They can be regulated, one functional state can be entered from another functional state. There are three ways of regulating the human body functional states. One is through material or energy exchange with the external world. The second is information exchange with the outside world. The third is the effect of its own consciousness, which is an extremely important method. Actually, Chinese medicine symptoms, QIGONG and human paranormal abilities are all special functional

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states of the human body and the behavioral display of their abilities. There are many human functional states, and they are manifest in many different behaviors. Also, during QIGONG states and paranormal ability states, there are different strange phenomena and effects. Our own scientific research has come up with some results:

1. Research into the description of the special characteristics of human body functional states. Professor Yu Hefeng of the Space Medical Engineering Institute used multiple dimensional data analysis methods to combine multiple item biological index variables into changing points which can represent the entire human body system. These were located at the multiple dimensional phase spaces, or target points and target loops, formed at the various variables. He discovered the individual target points and target loops of the waking, sleeping, alert and Qigong functional states. He was the first to use system science theories to describe the characteristics of the different functional states of the human body. Because the human body is a complex giant system, this method is still just a first step, and experience, multiple factors, quantitative and qualitative methods must be combined in ways to establish a description of the characteristics of the functional states of the human body.

2. There has been a great deal of research into the microscopic physiological and biochemical changes during the various functional states of the human body. The physiological and biochemical changes during the QIGONG state and human paranormal ability state in such indexes as EEGs, skin temperature, skin resistance, nerve current, blood pressure, and pulse rates have been measured, as well as the pattern of changes in these indexes and their physiological mechanisms. However, there should still be even more thorough research.

3. Research into the laws governing changes in the human body functional states and research to locate the special characteristic variables of the human functional states and the control variables are very important. If these are discovered, man can then freely enter a QIGONG state or a human paranormal ability state. Although research into training in QIGONG and work on causing persons to have paranormal abilities has made important progress, we still have not found the scientific characteristic variables and the control variables.

4. These are all studies into the functional states of the human body itself, but what about the behavioral effects on the relationship with the outside world of these various functional states, and what changes are generated by the functions (behavior and effects) during these different functional states of this giant system of the human body? We first emphasized phenomenological research, using scientific methods to determine the facts and accumulate objective facts. These can be divided into the major categories given below:

A. ESP: (1), Recognizing words by paranormal abilities. (2), seeing

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through solid objects, seeing through human bodies and seeing through layers of earth. (3), mental telepathy. (4), recognizing residual information. (5), recognizing magnetic fields.

B. PK: Moving the hands of a clock, moving the pen of a recorder, piezoelectric effects.

C. Paranormal transmission through the walls of a container.

D. Paranormal returning to an original state.

E. Paranormal writing.

F. Paranormal breaking of a connection.

G. Paranormal diagnosis of ailments.

IV. THEORIES AND HYPOTHESES

It is presently difficult or even impossible to explain these phenomena using modern science. China's science workers have also attempted to make a number of theoretical explorations. Up to the present time, they have not yet been able to determine any theory. Professors Xu Lanxu and Ruan Yingchao of Heilongjiang University explored the information carrier in paranormal word recognition and paranormal seeing through solid objects. They designed a complete set of strict optical experiments. They demonstrated that the information carriers in paranormal vision obey the laws of reflection and refraction, that they have the nature of horizontal waves, and obey the laws of polarization. Therefore, they deduced that the carriers were electromagnetic waves. The frequencies were similar to a portion which falls into the visible light range. However this does not indicate that human paranormal vision information is just visible light. Visible light is only a portion of the carrier frequency range. It has characteristics of electromagnetic waves and cannot be distinguished from the specific frequency light waves corresponding to the object viewed, and what those with paranormal abilities see is the light waves corresponding to the wave length of the object viewed. The author believes the hypothesis that human paranormal ability to see through solid objects is the equivalent to a type of "biological super sensitive (very weak light) sensory organs". That they are light sensitive and have selective discrimination capability. That they form three dimensional "sensing arrays" from different parts of the body. The author believes that paranormal functions during paranormal vision continuously radiates energy out of the body. What the connection is between this energy and the information carriers is worthwhile doing thorough research into. As for paranormal kinesis and breaking through wall barriers, there are also a great number of theories to explain these phenomena. This is even more difficult to explain. (1). Professor Lin Shuhuang of the Beijing Normal College proposed the hypothesis of "paranormal states". Those with paranormal abilities can cause some

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objects to go into a special state - abnormal state. When in this state, they cannot be detected by the sensory organs of normal people and ordinary measuring instruments. However, they can be detected by persons with paranormal abilities and some QIGONG masters. During the transition, the objects break through the physical barriers of space, indicating that this type of transition is not a simple mechanical movement within three dimensional space. When objects are in an abnormal state, the mechanical movement (like a watch) or biological processes (like a bug) of the object itself continue to be carried out, and when matter is in an abnormal state it emits an extremely reduced electromagnetic wave signal. Light sensitivity abilities are extremely reduced. It may be deduced that when mass is in an abnormal state, there may be a certain degree of energy and information insulation from the outside world. However, the basic nature of the "paranormal state" is not clear. (2), The hypothesis of physical state transition. This is also a deduction, since the object suddenly cannot be seen. Also, based on the "paranormal state" characteristics and the weakened energy and information to the outside world, it is considered that the object is disintegrated, then moved and then reassembled and reappears. Experiments by Professor Song Kongzhi of the Space Medical Engineering Institute demonstrate that when objects go through a glass wall, the shape of the object is not changed. The results of using a high speed camera (400 times per second) can explain that at the base speed of 400 times per second, the objects do not undergo any change in physical state. Professor Chen Yongshou attempted to observe whether or not objects broke down to atomic levels to pass through a glass wall and then reassembled. He designed a strict scientific experiment. The result was that he did not discover any matter at the atomic level passing through. This illustrates that it is possible that it is breaking down, and it is also possible that it is a transformation of the physical state even smaller than the atomic level. (3), The hypothesis of special energy and matter. This is the deduction that the human body emits a special energy towards objects and bodies (including man) which cause certain reactions leading to a series of effects. What are these types of energy and matter? According to Chen Yongshou's experimental observation of persons with paranormal abilities pulling objects out of a sealed glass jar, the failure to detect any matter passing through of matter at the atomic level, it can be seen that this type of matter is even smaller than the atomic level. British Professor Bohm, in accordance with the theory of indeterminance of quantum dynamics, postulated that it was possible that even smaller particles existed in a material world even smaller than quantum mechanics (10 to the power of negative 34). Using this theory not only is it possible to hope for an explanation of human paranormal ability phenomena, and even more importantly, tap the human latent potential. Professor Yeze (phonetic) of Japan experimentally postulated that there was a type of life force energy, and that when it was in sync with the universe it had an even greater effect. It generated special biological effects.

There are many others. However, we view very seriously the operations of electromagnetic waves. We postulated that the manifestation

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of human paranormal abilities could actually be an electromagnetic field between man and matter. When altering the state of a certain object, the object could passably generate electromagnetic waves or electromagnetic fields. The human body could receive the effects of the electromagnetic fields and electromagnetic waves in the environment, and there are many facts which illustrate this question. ESP could be due to man sending out electromagnetic waves to an object and an object sending them back transmitting information to the man. Finally, this information is processed in the brain and a conclusion is reached. Persons without paranormal abilities might not be able to process this information and it is lost, but persons with paranormal abilities could process it. For example, there are persons who are able to sense earthquakes in advance. this could explain this phenomenon. Persons with telekinesis abilities can use their fingers to set clothing on fire, and this could be due to the emitting of electromagnetic waves which excite the molecules of the clothing which reacts with the oxygen in the air to start the fire. Professor Wang Xiubi and others of our institute measured an emission of persons with paranormal abilities and QIGONG masters when transmitting a high frequency low intensity electromagnetic wave with a frequency between ten and 360 hertz at a power level of between minus 30 and 65 decibels. They also measured wide band electromagnetic waves under different conditions. We can see how out of body affects on certain objects is possible. He also observed the effects on objects when people were in a QIGONG emitting state. There were such cellular biological effects as the red blood cells had an increased surface charge density and accelerated electrophoresis and increased cell membrane fluidity. These effects are closely related to material transport inside and outside the cells, energy transfer, cellular discrimination, hormones and receptor effects and they will play a major role in further research into the mechanism of QIGONG and paranormal ability treatment of ailments. It is also possible that it is the effect of electromagnetic waves. In summary, from the result of our experiments and considering the knowledge already determined by modern science, it is very possible that the basic nature of QIGONG and paranormal abilities are related to the effects of electromagnetic waves and electromagnetic fields. However, human body radiation and its effects are extremely complicated processes. They could not happen through the series of characteristics of electromagnetic waves of which our modern science is knowledgeable. It is nothing more than a starting point for our thorough going research into QIGONG and human paranormal abilities. In the process of this research, it is possible that new clues will be discovered. As of the present time, these hypotheses are still very much insufficient. Some hypotheses have some facts which support them, but it is still not possible to explain even more phenomena.

Scientist Qian Xuesen pointed out many times that we must use dialectics, system sciences and the concept of the human body as a complex giant system to conduct phenomenological studies of somatic science (QIGONG and human paranormal abilities). We must establish phenomenological sciences of QIGONG and human paranormal abilities. On this basis we must thoroughly research the mechanism until we reach the

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point where we know what happens and why it happens. This will bring about new breakthroughs in theory, and will bring about new theories in modern science, especially in physics and biology. New matter and energy will be discovered which will bring with it new theories and will produce new technologies in some sciences such as communications science and materials science. It will be a flying leap in science and technology. It will be a new scientific revolution, and will thus create a new material culture for human society and will promote great advances in human society and culture.

SOMATIC SCIENCES AND SPIRITUAL CIVILIZATION

Many facts demonstrate that man has an extremely great potential power. However, up to the present time he has not completely developed this potential. How can the potential of the human body be developed? This is a very important question. First, the education system and education methods must be improved. The current education system is for a child to enter school at the age of six, go through six years of elementary school, six years of middle school, and four years of college, graduating at the age of 22. If he studies for two or three years in graduate school, he will get his masters degree at 24 or 25. If he studies on for his doctorate, he will be almost thirty by the time he gets this. This is the system which exists almost everywhere in the world. Too much time is taken. Is it possible to shorten this time? How can it be done? These are major question worth studying. Experiments by China's child education psychologist Liu Jinghe demonstrated that children in elementary school have theoretical thoughts. He also designed an educational method and personally went to an elementary school to teach as an experiment. The students understood very quickly, some students even were able to understand the textbook on their own. There was a response from the teachers of other courses that students who had this course were even more quick and intelligent. If this is the case, the education system can be shortened, and people can obtain learning in school more early, lengthening the amount of time they can work in society.

There have also been children in China and in other countries of the world who can learn a great many things. Twelve and thirteen year olds who are able to attend college courses. These children's abilities are mostly related to their home environment.

This all demonstrates that man has potential, that education can do very much and it is one of the major methods of tapping the potential knowledge. Through education, every person can become highly intelligent, knowledgeable and cultured.

Just how much potential does the human body have? This should be researched very carefully. We call research into this discipline the fourth medicine. We all know that the first medicine is the medicine of the treatment of disease, the second medicine is the medicine of the prevention of disease, the third medicine is the medicine of recovery or

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the adjusting of the human body to a normal biological state. The fourth medicine not only places the human body into a normal state, so it can live well, but it can also improve man's ability, and tapping man's potential is an extremely important discipline. It is a portion of somatic science. Whichever countries in the world are able to best develop knowledge in the future, will be on a solid footing in the world. Some people say that the 21st century will be the century of competition for knowledge. In the work of developing research into the fourth medicine, the most important question is that there must be the concept of somatic science. This is the use of the system theory, which is the dialectic unity of the theory of the whole and the reduction theory, to study the fourth medicine. It must pay attention to the effects of consciousness. It can change one's physiological activities. Consciousness is the highest level of the activities of life. It can have a reaction on the lower levels of physiological activities. Traditional Chinese medicine, QIGONG and human paranormal abilities all view the effects of consciousness very seriously.

Through the effects of consciousness, it is possible to adjust the human body to a QIGONG functional state, that is normal persons can be trained to become persons with QIGONG abilities. QIGONG masters who have trained for a long time can also attain paranormal ability states. China's science and technology workers have successfully trained normal persons to become persons with paranormal abilities. China's QIGONG workers, through elementary student experiments, have demonstrated that QIGONG can tap potential to develop intelligence. If we apply the laws of human physiological development to education and then clearly understand the rules of the development of "child geniuses", and apply the laws of both QIGONG and paranormal abilities to education and training, then in the 21st century we will not only be able to nurture highly intelligent, knowledgeable and cultured persons, but we will also be able to allow them to have what is now called "paranormal abilities". In other words, the fourth medicine is the study of improving the functional states of man. Once the functional states of man have been improved, man's potential abilities can be brought out. Once man's potential abilities have been brought out, the quality of man will be raised to an unprecedented degree, and the limitations on the brain and the display of stupidity will be broken through, allowing man to make an even greater leap in his recognition of the objective world and improvement of the objective world. Is this not a second cultural renaissance? It will greatly promote the establishment of spiritual civilization. We can see from this the importance of somatic science research.

The relationship between spiritual civilization and material civilization has caught the attention of learned men throughout the world. People note that in today's world, research into the human spiritual field is developing much slower than research into the material world. People also recognize that if the view of modern science and technology and the modern view of mankind which separate the spiritual and the material continue to develop, a human crisis will occur. It is necessary to

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reconsider and to make a new evaluation. People must use scientific methods to investigate the relationship between the spiritual and the material. They must understand the relationship between spiritual civilization and material civilization. They must properly understand the relationship between spiritual and material, between the brain and consciousness. One need only use the dialectical theory of recognition which is the concept of unity of thought and action, and dynamically recognize the relationship between the objective world and change the subjective world and objective world repeated increases in understanding, and one can understand the proper relationship between the material civilization and the spiritual civilization. Whether or not man is able to dynamically have a proper understanding of the objective world and change the subjective and objective world is related directly or indirectly to the level of man's experience and grasp of modern science and technology and social science philosophy. It is also related to the establishment of human morals, ideals, beliefs and religion. It is impossible to imagine the proper development of a material civilization with its economy and technology without the development of a spiritual civilization of ideology or culture. At the present time of highly developed material civilization, the importance of the building of a spiritual civilization is even more clear. We can see that spiritual civilization and material civilization act to advance each other. It is necessary to build these civilizations together. The achievements of somatic science research will promote the establishment of future new human forms and advanced science and technology, and the creation of human social spiritual civilization and material civilization.

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SOMATIC SCIENCE, ANTHROPIC PRINCIPLE AND THE MARXIST PHILOSOPHY

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Somatic science research which was born on the Chinese mainland in the Eighties has already been around for 12 whole years. It is currently in the midst of becoming a new major scientific department. In the body of modern science and technology, somatic science is one of the promising leading edge scientific fields and one which could lead to a new scientific revolution in the 21st century.

The beginning and development of somatic science in China was a major scientific event. It not only attracted a great deal of interest and close attention in many fields in Chinese society, especially in the academic fields, it also launched a controversy around human paranormal abilities which has already risen to a philosophical height. This article attempts to present a simple description and further exploration of the relationship between somatic science and the philosophy of Marxism as well as several aspects concerned with the question of anthropic principles.

SOMATIC SCIENCE AND THE PHILOSOPHY OF MARXISM

Scientific research work is always conducted under the control of philosophical ideology. Good philosophical ideology can promote progress and advancement of science and bad philosophical ideology can inhibit the smooth conduct of scientific research. This is because any philosophical ideology is some sort of world outlook, theory of recognition and methodology. Also, in the design of scientific research, in the experimental and summarizing process, every scientific worker will knowingly use a certain world outlook, theory of knowledge and methodology. Just as Engels pointed out, no matter what type of attitude is adopted by natural scientists, they will be controlled by philosophy. The problem is, they are willing to be controlled by certain bad fashionable philosophy. Actually, historically as well as at the present time, no science has been far more of a "pure science" than philosophy. Somatic science which grew up on the Chinese mainland is not any sort of "pure science". It has all along consciously accepted the guidance of the philosophy of Marxism, and furthermore has made active contributions to make the philosophy of Marxism even more deep going.

(1). THE EXCELLENT TRADITION OF CHINESE SOMATIC SCIENCE

The maintenance of practice is the only standard for testing for truth. The maintenance of the guiding effect of the philosophy of Marxism. These are the two major excellent traditions of Chinese somatic science.

Those conducting work in somatic science research, for any somatic ability phenomenon, only after maintaining the necessary strict and conscientious experimental testing, can only then determine or acknowledge basic principles (there are also some charlatans who fake abilities, these have nothing to do with somatic science research). A large portion of comrades doing this research did not believe at first in the paranormal abilities of "recognizing words with the ear" because their scientific knowledge at the time was that only the eyeball vision network could receive and transmit sight signals. Some of them even wanted to use strict scientific testing to disprove the paranormal phenomenon which violated scientific common knowledge. However, the results of the experiment were the exact opposite of the original subjective ideas and hopes of these comrades. The tests demonstrated the actual objective existence of human paranormal abilities. At this time they did not use their subjective ideas and understanding to revise or refute the objective scientific experiment, but quite the opposite, they allowed their subjective understanding and views to conform to the objective experimental facts. This is the only proper scientific attitude. The ten plus years of growth of somatic science has demonstrated that the workers in Chinese somatic science in their own research operations have conscientiously and thoroughly carried out the party philosophical principles of using the standard of practice for truth.

Through their own research operations the workers in China's somatic science have come deeply to realize that: "the problems discussed in somatic science are all related to the dialectic unity of the material and the spiritual, to the objective and the subjective and the brain and consciousness. In such a complicated problem, if we do not use the guidance of the philosophy of Marxism, we will definitely make mistakes." Therefore, the use of the philosophy of Marxism, or dialectical materialism to direct their research in somatic science has already become their guiding principle and their operational program. Therefore, they not only clearly state in the bylaws of the Chinese Society of Somatic Sciences the quoted portion above, furthermore in the conduct of their work they consciously resist any sort of idealism, feudal superstition, quackery, or metaphysical errors to sneak in or interfere. They strictly ensure that somatic science will truly follow the ideological line of dialectical materialism and move forward in a healthy manner. They consciously maintain the guiding principle of the philosophy of Marxism. This is the second major excellent tradition of China's somatic science.

(2). THE SCIENTIFIC FUNCTION OF DIALECTICAL MATERIALISM

As a high level science, the philosophy of Marxism also similarly has its own special scientific function. On one hand, it can digest and absorb new facts and new innovative views of other branches of science and use them to deepen and renew its own philosophical conclusions and principles in order to keep pace with the ever changing modern sciences. On the other hand, as scientific world view and the highest methodology,

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the philosophy of Marxism also provides direction and assistance to the development of the various branches of science in order to strengthen their ability to reject and abandon various forms of idealism and metaphysics. This is the scientific function of the philosophy of Marxism and self reliance to direct and assist. Dialectical materialism similarly has the scientific function of digesting and absorbing (somatic science source material) and guiding and assisting (the growth of somatic science).

(3). BRAND NEW MATERIALS WHICH PROMOTE THE PHILOSOPHICAL INTENSIFICATION

Under the guidance of the philosophy of Marxism, China's somatic science has undergone a healthy development. At the same time, the rise of somatic science added to and deepened the basic principles of dialectical materialism, providing brand new scientific materials. Based on the current level of scientific experiments and research, we will only attempt preliminary discussion of the two following questions.

1. The basic nature of thought: The significance of, and new knowledge concerning, the relationship between the consciousness and brain of persons with paranormal abilities.

Without any doubt, it is naturally the brain of persons with paranormal abilities that generates their consciousness and thoughts and not the other way around. The question is, the objective facts of "paranormal abilities" indicate that the thought process of this paranormal abilities state may very well follow the transmission and reception of certain "paranormal energies". This is what causes the subject with paranormal abilities to affect other bodies outside his body. Obviously, somatic science research makes clear that at the very least, the consciousness created by the brain of a person with paranormal abilities is not that thing with no material content as recognized and understood in the traditional sense. Actually, their conscious activities or "thought phenomena should be a manifestation of certain matter activity at a level below the level of the brain cells, just as the phenomenon of light is a manifestation of the activity of photons (electromagnetic waves)." It is just because of this that there are some people who now believe that "the thought process of the human brain may very well be switched from the activity of macroscopic matter (the brain) to the activity of microscopic matter (such as thought waves)."

This new explanation and recognition, on one hand further demonstrates that "our consciousness and thoughts, no matter how super sensitive they are seen, are always the product of matter, flesh and organs as well as the human brain. At the same time, it also discloses that human thought or consciousness contains matter and characteristics which go even deeper than that indicative of "the brain or its abilities".

2. The potential of the human body: The "hidden state" phenomenon

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in paranormal transfer deserves to be studied and outlined.

In 1982 the joint testing group for human paranormal abilities completed "paranormal transfer" experiments in Beijing. During the course of the experiments it was discovered that under the effect of the paranormal abilities, the objects used in the experiments disappeared in front of the eyes of the experimenters, which is the so-called "hidden state" phenomenon appeared in these objects during the experiments at this time normal person's organs of sense could temporarily detect the movement or sound of the objects). After a period of time, the objects once more appeared in a different special position. However, the person with

paranormal abilities, who was to subject in the experiments, was aware of the location of the objects during the time of their "disappearance" and "reappearance". This kind of "hidden state" phenomenon of the subject was after

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the natural sciences.

1. IS IT RATIONALISM OR IS IT THE THEORY OF PRACTICE?

As we stated earlier, researchers in somatic science have all along used strict scientific experiments to test the phenomena of paranormal abilities. In their scientific experiments, they have maintained the criterion that the test of truth is practice. However, someone who had an attitude that human paranormal abilities did not exist proclaimed: "Human paranormal abilities is basically impossible. This can be determined without any need for conducting experiments." Therefore, he never conducted any experiments or tests for paranormal abilities. He never even went to observe this type of experiment. It is said that he wrote in a letter that he could determine that paranormal abilities did not exist from "common sense alone", because this is a theoretical question" and not a question of practice.

We can see from this that in the debate concerning paranormal abilities, between the researchers and those opposed, there is a basic opposition which actually exists as to whether it is the theory of practice that is being maintained or whether rationalism is being pursued.

2. IS IT "STAGNANCY" OR IS IT GROWTH

One of the greatest bases opponents use to oppose paranormal abilities is because human paranormal abilities violate current scientific knowledge, or they say that current scientific knowledge cannot completely explain these new abilities. This involves a basic question in the attitude toward scientific research. Can science only stand where it is, or should it continue to develop? If science can only study things which conform to common knowledge and cannot investigate abnormal unknown fields, is science not just stagnating or regressing and never can grow? If this typical "stagnancy" had appeared 400 years ago, would the theory that the sun was the center of the solar system ever have replaced the old theory that the earth was the center?

3. IS IT SUBSTITUTION OR IS IT ALLIANCE

Nay sayers have called somatic science research a number of names such as "spiritualism", "pseudo science" and "idealism". They have also called it such things as "counter to science", "empiricism" and "counter to Marxism", there are too many to list. As for science being able to immediately explain the new phenomena and it being criticized as "substituting one thing for another", has science not recently gone through the lessons and tragedies of criticism of "gene theory":, "theory of relativity", "theory of resonance", "thinking in terms of images" and "quantitative economics"? The question is, why must we go down that same path in the eighties? This question deserves the deep reflection of those in China's scientific and philosophical circles in order to eliminate "substitution" effects on the development of science and technology in

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China. In addition to further resolving the dialectic relationship of maintaining and developing the philosophy of Marxism, we must all energetically advocate that philosophical workers must "ally with the natural scientists of the same generation" in order to make the best of the guiding function of dialectical materialism on science and technology, and thus welcome the mutual progress and mutual flourishing of modern science and technology and the philosophy of Marxism.

ANTHROPIC PRINCIPLES - THE PHILOSOPHY OF SOMATIC SCIENCE

Back in May of 1982, Comrade Qian Xuesen proposed the establishment of "a new anthropic principle" to be used to tie together the philosophy of Marxism and the ideas of somatic science. In November of 1983, he further proposed taking the "super large system of man and the environment and man and the universe" as the object of research of the anthropic principles. In June of 1987, he further described the scientific nature and scientific position of anthropic principles, pointing out: In somatic science, "the highest level is the philosophy of Marxism. Its specificity and that portion of its philosophy related to somatic science is called the anthropic principle." It goes without saying that the proposing and studying of new anthropic principles opens up new fields in the Marxist view of man and nature.

(1). THE "BRIDGE" BETWEEN SOMATIC SCIENCE AND PHILOSOPHY

We all know that in the stratified division of the structure of modern science, the philosophy of Marxism (dialectical materialism) occupies the highest level. At the next level is philosophical science such as natural dialectics, historical dialectics (social dialectics), mathematics studies (mathematical dialectics), system concepts, thought dialectics, and anthropic principle. The third level includes the branches of science and the major types of science such as natural sciences, social sciences, mathematical sciences, system sciences, thought sciences and somatic sciences. Each of these major scientific fields has its own basic science, technical science and engineering technology as its own internal scientific levels.

Because "the anthropic principle is a philosophical question for somatic sciences", it may be said that it is a "bridge" between somatic sciences and the philosophy of Marxism. Or it may be said that it is a medium between somatic sciences and the philosophy of Marxism. Through the anthropic principle, the philosophy of Marxism has led the healthy development of somatic science, and across this same bridge, somatic science has encouraged and prompted the philosophy of Marxism to become even more fruitful and deep going. We can see that the nature of an intermediate bridge of the anthropic principle provides it with this double scientific function of leading and promoting at the same time. Therefore, a thorough exploration of the anthropic principle is of major scientific significance for the thorough development of both somatic science and dialectical materialism.

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(2). THE "MARXIST" "PHILOSOPHICAL" ANTHROPIC PRINCIPLE

Everyone knows that there has been the so-called "study of nature and man" and "debate over man and nature". These are theoretical thoughts in the study of the mutual relationships between "way of nature" and "way of man", "natural" and "artificial" and "large universe" and "small universe". However, the anthropic principle we are discussing here is not the same as any of the anthropic principles in the history of philosophy. This is modern anthropic principle or the new anthropic principle. In the summer of 1988 at the Sichuan Somatic Science Research Conference, the Special Group for the Anthropic Principle convened an "academic discussion conference on the anthropic principle and logical thought". At this conference, a comrade vividly pointed out that "the anthropic principle is 'Marxist' and it is 'philosophical', it is that portion of dialectical materialism theoretical thought which is focussed directly on somatic science." Obviously, our present study of the anthropic principle is basically different from Dong Zhongshu's "Tianren Ganying" and is different from idealism's "destiny" and the "Zhitianshuo" of old materialism. This is the scientific modern concept of the anthropic principle. It is also the dialectical materialistic view of the anthropic principle.

Although the anthropic principle is also philosophy, in the philosophy of Marxism, it is a component factor which is of relatively low priority. It and the natural dialectics are the basic methods of research into the anthropic principle, or, it is consistent with the core of the scientific methodology of the anthropic principle.

(2). CONCERNING THE STRUCTURE OF THE ANTHROPIC PRINCIPLE

Because the anthropic principle is a new science which is just being established, in addition to determining the objects of its study and its scientific nature and position, it should also gradually launch explorations concerning the structure of the science of the anthropic principle and into basic theory. Below we attempt to discuss simply these two questions and to raise some preliminary ideas.

Concerning the structure of the anthropic principle, based on current knowledge, it seems that we can consider the three following aspects.

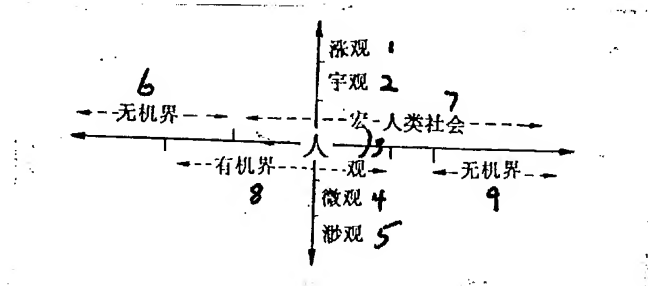
1. The question of the vertical strata of the anthropic principle.

This is concerned with the vertical stratification of the relationship between man and the environment. In 1983, Comrade Qian Xuesen proposed that the anthropic principle has three levels which were the universal anthropic principle (astronomy), the macroscopic anthropic principle (theories of Chinese Medicine and of QIGONG) and the microscopic anthropic principle (quantum mechanics). In 1985, he further pointed out that in addition to the universal, macroscopic, and microscopic anthropic

principles, there were also two more layers, the expanding anthropic principle (theory of the expanding universe) and the vague anthropic principle (hidden sequence theory). In this way, the anthropic principle is divided into five vertical layers. (see illustration one).

2. The question of the horizontal series of the anthropic principle.

As the horizontal living environment (space and time) in which man exists is not the same, the anthropic principle can be divided into the following interrelated research series.



1. Expanding view. 2. Universal view. 3. Macroscopic view. 4. Microscopic view. 5. Vague view. 6. Inorganic field. 7. Human society. 8. Organic field. 9. Inorganic field.

First is the inorganic anthropic principle. It is concerned with the research fields of the relationship of man and the inorganic natural world. Second is the organic anthropic principle. It is the research field concerned with the relationship between man and the organic world or the world of life. Third is the social anthropic principle. It is the research field concerned with the relationship between man and the social ecological system. Fourth is the complex anthropic principle. It is the research field concerned with the relationship between man and the complex environment (complex system of the organic environment and the social living environment). At the present time, mankind's living environment is becoming more and more a two dimensional or multidimensional complex ecological system (see illustration one).

3. Questions of the branches of the anthropic principle.

Just a slight comparison of the anthropic principle and human ecology and it is easy to discover that the objects of their study are very related and similar. The anthropic principle studies "man and the environment and man and the universe" which is "the relationship between man and the surrounding environment" and their effects on each other. Human ecology also studies "the relationship between man and the environment and their effects on each other." We can see that from the view point of ecology, the anthropic principle is nothing more than the

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view of the human body ecology or human ecology. Using this as the starting point, for the question of the branches of study of the anthropic principle, can we not consider the ecologic way of thinking?

If we consider that there are differences in the individuals, populations and communities of mankind, it seems that there should be separate branch studies of the individual anthropic principle, population anthropic principle and community anthropic principle (city and village anthropic principle).

If we consider the different angles of study or the different disciplines such as mathematics, physics, chemistry, ecology, system sciences and economics, then there should also be the branch studies of a mathematical anthropic principle, physics anthropic principle, chemistry anthropic principle, ecological anthropic principle, system sciences anthropic principles and economic anthropic principles.

(4). CONCERNING THE PROBLEM OF THEORETICAL EXPLORATION OF THE ANTHROPIC PRINCIPLES

Concerning theoretical exploration of the anthropic principles, based on current knowledge, at least the following theoretical questions should be explored.

1. The categories of anthropic principles, such as man, nature, the human body, the environment, populations, anthropic systems, open giant systems, human ecology and anthropic interrelationships.

2. The basic principles of anthropic principles such as the coupling principles of anthropic interrelationships, the balancing principles of human ecology, the evolutionary principles of the hierarchy of anthropic systems, the principles of the structural functions of anthropic systems, the principles of purposeful actions of anthropic systems, the principles of regulation and control in anthropic systems and the principles of feedback control in anthropic systems.

3. The basic laws of anthropic principles, such as the laws of mutual reliance and effects of man and nature, the laws of harmonious existence and growth between man and nature, the laws of the adverse effects of the main body of man on anthropic principles, the laws of constructive benefits of anthropic system ecology, economy and society, and the laws of the irreversibility of anthropic systems.

These categories, principles and laws are only preliminary and exploratory opinions.

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CHARACTERISTICS OF THE HUMAN BODY AS AN OPEN COMPLEX GIANT SYSTEM

SYSTEM PRINCIPLE OF CHINESE MEDICINE

BY: Zhang Ruijun of the Institute of Space Medicine Engineering

The open complex giant system and its methodology advocated by Mister Qian Xuesen has important guidance significance for the important development of system sciences and for basic theoretical research in Chinese Medicine. This article discusses some related questions, and the author invites critical remarks and corrections from the readers.

(1). THE SIMPLE SYSTEM PRINCIPLES OF CHINESE MEDICINE

Chinese medicine is generally characterized by a holistic view and dialectical treatment. Actually another important characteristic is the simple principle of systems. The systems in Chinese medicinal theory not only describe the characteristics of the various component parts such as the internal organs, networks, respiratory and circulatory and endocrine, but they also present the characteristic nature and laws of the levels of the systems, such as yin and yang, the five primary elements of metal, wood, water, fire and earth, the five atmospheric influences of rain, fine weather, heat, cold and wind, and symptoms. They also describe laws governing interaction among them such as the opposition, mutual foundation, weakening and strengthening and rotation of yin and yang and among the five metals. Therefore, the basic theories of Chinese medicine present a form of system principle. However, this is a very commendable point, as modern science does not yet have this type of system overall framework in its human body theories.

(2). THE SYMPTOMS AND FUNCTIONAL STATES OF CHINESE MEDICINE

Qian Xuesen advocates that the functional states of the human body are an important topic for somatic sciences. He starts out from the system sciences and proposes that we should study the dynamic processes, with are the functional states, from the viewpoint of the interrelationships within the whole. Western medicine accepts he principle of determination by cause and effect, and its emphasis is on the study of the specific reactions of the organs and cells of the human body. Actually, in order to achieve a specific function, human physiological activities are all the overall dynamics of the coordination between the various organ systems such as feeding, sex, sleeping, alertness and reaction to stimulus. Although one specific organ system plays the major role, it requires the coordination of the various bodily organs to work together to accomplish these acts. Therefore, all the overall activities of the human body are functional state activities. Chinese medicine research into symptoms does not place the emphasis on the seat of the disease or on a particular reaction of a specific organ, but it studies

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the regulating and control reactions caused in the overall body by the disease. Therefore, Chinese medicine symptoms are the study of functional states. For example, the Chinese medicine identification of the eight key links is the study of the system characteristics of the human body (yin and yang, internal and external, false and real, cold and heat) and changes in the relationships among the component parts (internal organs) and dividing the overall regulatory and control reactions into a number of symptom models. Furthermore, Chinese medicine cures actually focus on the characteristics of the symptom model and regulating this with medicine in order to bring the body back to a healthy balanced state. This is the great contribution of Chinese medicine to the body of human medicine. Therefore, Chinese medicine research into symptoms has provided a theoretical model for the functional states of the human body and a large amount materials on clinical experience. These must be summarized and studied.

(3). STRATIFIED STRUCTURE

Western medicine is relatively strict and detailed in its stratification of the structure of the human body. It divides the human body into such layers as the whole, the organs, the tissue, the cells and molecules. In the regulation and control relationship of the individual layers, it stresses the control of the higher structures over the lower structure. In the beginning it stressed the central nervous system's control over the surrounding organs, with the organs only playing a mechanical role. Later it discovered the regulating of the hormones, and still stressed the control of the hypothalamus over the target organs. Chinese medicine has a simpler stratification of the human body, which is also somewhat confusing. However, in addition to stressing the control by the higher levels, it also stresses that there is a mutual connection and control between the lower internal organs. Chinese medicine uses the philosophy of the five elements to explain the various relationships among the heart, liver, spleen, lungs and kidney. This idea is currently being illustrated by modern medical facts. The physiological application of the feedback principle proposed by Weiner and others fully explains the important role played by lower level organs in overall regulating and control loop. There are currently sufficient facts to illustrate that the internal organs are not only acting organs, but are also excreting organs which exercise regulation and control. The Xinnasu (STC: 1800 6871 4790) excreted by the heart, prostaglandin excreted by the prostate gland and the gastrointestinal hormones excreted by the stomach are all necessary links in the mutual regulation among the organs. Even between cells there is mutual regulation of bodily fluid factors such as the various factors secreted by the lymph glands which regulate the phagocytosis effects of the macrophage and the white blood cells. Therefore, the regulation of functions of every level of the entire body, including the mutual regulation at the various levels of the central nervous system, the internal organs, the cells and the molecules form the complex picture of the human giant system.

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(4). OPEN AND STABLE

The human body is an open system, it must constant exchange energy and information with the environment. Chinese medicine takes the human body to be a part of the universe environment, constantly being effected by the environment such as the theory of the movement of Qi through the body and the shifting between midnight and noon. However, the human body must also maintain its own stable state, so the body is in a dynamically stable state. Chinese medicine places a great deal of emphasis on maintaining a balanced state between yin and yang. Therefore open and stable are contradictory. In order to maintain a state of balance in the human body, the openness to information and material from the outside world is selective. For example, such sensory organs as those for hearing and sight can only transform outside information within a certain range into nerve impulses which are processed. The sensory organs cannot act to transform energy or information outside the range of normal hearing or visible light. To absorb nutrients, the food must go through the stomach and intestines where it is transformed into glucose, fatty acids and amino acids before it can be selectively absorbed into energy and building materials usable to the human body. The human immune system is an even more selective system. It rejects all protein which is not of the body of itself, including germs, maintaining the body's wholeness and eliminating the threat of disease causing germs. All cells are enveloped in a membrane layer which is called the cytomembrane. Its function is to allow the cell to have selective material exchange, selectively taking in and eliminating various matter. The cytomembrane has different receptors which are an information transfer system which serve to distinguish between and accept various enzymes and drugs. Therefore, the cell is a selectively open system. In summation, there exists within the human body, from the overall body to the organs and cells, an open and stabilizing relationship which contain a great number of questions which have not yet been answered. This also forms the complex picture of the giant open system of the human body.

The system of theories of Chinese medicine have unique viewpoints and theoretical models of the human body system. Thorough research of these points will provide a helpful theoretical framework for the human body as an open complex giant system. In recent years, many authors attempted to carry out this kind of work, and continued to delve deeper. However, in general, the Chinese medicine system theories are still in the beginning stage. Not only is it necessary to summarize the theoretical system of Chinese medicine from the viewpoint of system sciences, it is also necessary to collect and study a great deal of scientific facts concerning human bodily functions. In this area, the facts accumulated by Western medicine and physiology should be absorbed. The opinions described in this article are all preliminary opinions, and are presented for reference.

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THE HUMAN BODY IS A THREE PART COMPLEX GIANT SYSTEM
CONSISTING OF "SPIRIT, QI AND GOD"

BY: Wu Banghui (Sichuan University)

ABSTRACT

This article starts out from the viewpoint of system theory and in accordance with the duality of the "solid body and fields" of biological material clearly pointing out that the human body is a three part complex giant system consisting of "spirit, QI and god". It also emphasizes the point out that the human body field (QI) also has a complex stratified structure. It forms a giant system which is connected to the "solid body". The fields of the different levels can have different qualities, and in the human body they may have the effect of "ordered parameters". "God" is the functions of the human body. The high level functions connected to the functions of the human brain which cannot be completely attributed to physical, chemical or even biological functions. In the narrow sense, "god" is information processed through the spirit and Qi systems of the brain. It has material carriers, and can react on the human body and can also effect the outside world. From this we can understand the basic principles of Chinese medicine and QIGONG.

KEY WORDS: Solid body, field, functions, spirit, QI, god, system, synergenics, ordered parameters, brain, information.

I

From the viewpoint of system sciences, a basic question in the study of systems is the examination into just exactly "what" is this system. This is the examination into its structure (what is it composed of? How is it formed?) and its functions as well as the relationship between its structure and its functions. This is one key in the understanding of the basic nature of a system and of using system science methods to study the system. This is so for systems in general, and this is so for biological systems. This is also so for the highest form, the human body.

Therefore, the question of "what is the human body", or as a "material system", what is the structure of the human body (what is it composed of? How is it formed) and what are its functions as well as what is the relationship between its structure and its functions are the basic questions studied by somatic sciences. Somatic science, this huge scientific system, must be established on the proper base of knowledge corresponding to this question.

Research in sciences from anatomy to molecular biology as well as modern physics have already disclosed that the human body, as a "material

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system", contains the following "strata".

Individual, system, organs, tissue, cells, molecules, atoms, subatomic particles, ...

On this basis, modern biology and other corresponding sciences concerned with the human body have come up with questions and answers. This is the extremely precious knowledge which has been obtained by following the path of "analysis" since modern science began to develop. It can be called the "solid body model" of the human body. It began in the West and the medical science which quickly developed in the West, which is generally called Western medicine was established on the basis of this model. This developed along with modern science, received support from corresponding modern technology and achieved glorious achievements. Since the latter half of this century, with the birth of system sciences, research in modern system theory also gave modern life sciences a new vitality, giving it hope that on the basis of "analysis" it could achieve a life science system with overall knowledge which would include the system of the human body. This type of knowledge should be the dialectical unity of analysis and synthesis.

However, when studying the human body from the viewpoint of applied system sciences and looking at certain human phenomena which modern science is not yet able to explain or even accept, we cannot help but keep coming back to the original question time after time.

"Just what is the human body?"

"The individual, systems, organs, tissue, cells,..." all undoubtedly are part of the human body. The question is, Is this all there is to the human body? "Can an "experimental body" completely reflect the basic nature of the human body?"

Actually, Chinese medicine with its thousands of years of history, and its theoretical basis which has been unshaken by modern science, has silently challenged this model. Chinese medicine is far behind Western medicine in anatomical knowledge of the human body, even less in its knowledge cytology and molecular biology. Actually, the theories of Chinese medicine do not emphasize the structure of the solid human body. Several thousands of years ago, with very little knowledge of the structure of the solid human body and under very unclear circumstances, Chinese medicine had a convincing total system of theory and its practice was outstandingly effective. Furthermore, under the assault by modern science and Western medicine, its theories continued to stand firm. They did not shirk or break down or dissolve. In practice, although Western medicine has had growth and development, Chinese medicine can still "go its own way". This situation at least shows that there is something else to the human body in addition to the structure of the solid body. It objectively also presents the question of whether or not the structure of the solid body can completely reflect the basic nature of man, including

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the question of whether just the nerve cells of the brain can completely explain the functions of the brain.

In recent years, research into QIGONG and paranormal abilities has even more sharply dangled this question before everyone. Here, in order to explain some questions, we will use two examples which have already been demonstrated by a great deal of observation and testing.

The first example is the phenomenon of using paranormal abilities to remove objects through the glass sides of a bottle. A person with paranormal abilities can "use his abilities" to cause samples which are inside a sealed glass bottle to "go through" the glass sides while maintaining the macroscopic integrity of the samples and glass containers. This experiment has already been repeated several times by someone, and there is recorded visual material which can be checked¹.

The second example is the "long distance diagnosis" of QIGONG. In ten examples of extrasensory perception, the QIGONG master under a QIGONG state could diagnose a persons ailment from the subjects fingerprints, an object he used or a relative of the subject. He could even "see" the subject's features. Because the QIGONG master had not seen the subject (at times they were very far apart), this is called "long range diagnosis).

This type of phenomena is very difficult to explain using the "solid body model". How can a person remove the sample object from a sealed glass bottle without touching the sample object and without using any sort of tool and yet not damaging the glass bottle or the sample object? How is it possible to know the condition of a patients body without pictures, without chemical tests and without even the looking, listening, and asking questions used by Chinese medicine or removing anything from the body of the patient? There should be a material basis for the functions of a material system. Even though we can use the theory of the "black box" or "grey box" to study systems, the object is still to uncover the basic nature of the system, to make it "white". What is the material basis for those several functions manifest by the human body while in a QIGONG state or in a paranormal abilities state? Can we really hope to explain them on the basis of the "solid body model"? If we limit ourselves to the "solid body model" to explain the incompatibility of Chinese and Western medicine which both seem to be effective, it becomes very difficult to understand QIGONG and paranormal ability states.

This is what has caused us to naturally turn to another form which exists in physics, the field.

We have had concepts of fields for a long time. People have considered the concept of a human body field for a long time as well, and this can even be traced to ancient times². In recent years, with the advances in science and technology, there have been serious studies given to human body electric fields, human body magnetic fields and human body

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electromagnetic fields which have achieved an abundance of fruitful experimental results³. People also believe that in addition to the physical components of the "human body field" and "human body energy fields", there are also "unknown qualities of non physical fields". However, what is the nature of these "fields"? What is their relationship with the human "solid body"? Can they be used to explain Chinese medicine, QIGONG and paranormal abilities?

In addition, there is another extremely important fact, the "thought" in QIGONG and paranormal abilities, which is worthy of note. At times it has effects which are difficult to explain. For example, there are the questions of "thought power" and "when one is sincere it works". There is also the question emotions and determination causing and curing ailments in Chinese medicine. An even broader question is "what is human consciousness"? What is its relationship with the human "solid body" and "fields"?

In order to discuss these questions and to further clarify the general material basis for life systems and the human body systems, and with the hope of fairly thoroughly understanding the various phenomena related to the human body, and based on the observation of known biological phenomena, and with the inspiration of Chinese medicine, modern physics and system sciences, the author proposed in "The Hypothesis of the Duality of the Solid Body and Fields in Biological Material and Preliminary Investigations into Its Relationship to Chinese Medicine"⁴, shortened to "Duality", "the duality of the solid body and fields of biological material." For ease of reference, we will give an abstract of this hypothesis:

(1). For any living organism, from the population and individual to the system, organs, tissue, cells and even the body of major biological molecules of the "solid body", they are all connected to a certain "field" (in certain aspects, especially the connection between carriers and electromagnetic fields and objects, because there is mass, so there must be a connection to gravitational fields). "Solid bodies" and "fields" are two aspects of living material, which means that living material has at the same time, a separation and a connection. These two aspects together form the material basis for biological activity.

(2). The two aspects of "solid body and "fields" of biological material are different and yet related, and they influence each other. Together, they determine the functions of the living body and they also are reacted upon by the functions of the living body.

(3). The living body is not only subject to influences of the internal and external physical and chemical environment, it is also influenced by the biological environment. Under certain conditions, there mutual effects and influences between the "solid body" and "fields" of a biological body and the "solid body" and "fields" of other biological bodies.

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(4). There is a certain physical nature to be "fields" of biological material. For example, it be electromagnetic. However, it cannot be classified as a physical field such as an electromagnetic field or gravitational field as we know them. From large chemical molecules to simple living organisms and even to high level organisms, when there are changes in the nature of the "solid body", there are also changes in the nature of the "fields". In the study of the "solid body", the "reduction theory" (this is that biological organisms can be categorized by the physical and chemical characteristics of its structural components) is one-sided, and in the study of "fields", the reduction theory is also one-sided.

(5). Because biological fields are not the same as non-biological fields, it is possible that the nature of time and space related to biological fields are not the same as those related to non-biological fields.

On the basis of this hypothesis, the term "duality" we will provide a preliminary explanation to the "spirit, QI and god" of Chinese medicine and further discuss the characteristics of Chinese and Western medicine and possible future developments based on the duality of "solid body and fields".

Continued research along this direction, especially when attempting to specifically using system theory methods on the human body and exploring the basic theories of Chinese medicine, we further need to recognize that as an open complex giant system, we must not only emphasize the solid body system, and even must not emphasize its solid body system. We must give special consideration to the relationship between the solid body and the fields. Only in this manner can the biological matter which has the duality of "solid body and fields" be the material basis of life, and only in this manner is it the material basis for the human body. This corresponds to the "three precious essences of the human body, spirit, QI and god" of Chinese medicine (however because of historical circumstances and the limitations of the level of development of modern life sciences, the discussion of "spirit, QI and god" in the study of Chinese medicine appears confusing and not specific enough. Also, there is no unified set of laws. Therefore, here, we are only using "corresponding", or comparative to a certain degree, and not exactly equal to). Therefore, the human body should be viewed as a giant system single entity of three parts - "spirit, QI and god" (not only in which "spirit, QI and god" co-exist). It goes without saying that the human body giant system is open.

Below, we will further discuss several basic questions concerning the term "duality".

(Translator's note: page 128 is missing from original here.)

What is the "avenue of Chinese medicine?" The explanation here is

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the equal emphasis on spirit and Qi, and not undue emphasis on Qi. Therefore, in order to promote delving even deeper into the theories of Chinese medicine, in addition to giving full play to the superiority of Chinese medicine, it is also necessary to make use of the theories and research methods and techniques concerned with the "solid body system" provided by modern science and Western medicine and work hard to uncover the actual nature of Qi, and at the same time fully absorb the abundance of knowledge provided by modern life sciences on the human body and turn it into vital parts of our own theories. In this manner, it is possible for us to further utilize system sciences to process the two interrelated giant systems of "spirit" and "Qi" in a unified manner. Furthermore, this is wherein lies the hope for tremendous advances in the quality of life sciences.

Corresponding to the complex stratified structure which forms the "spirit" of the human body, there is a complex stratified structure of "Qi". This must be reemphasized because Qi at different levels can be of a different nature. Above certain levels (corresponding to the "solid body", it may be at the cellular level), Qi can carry biological information (including physiological, pathological, psychological and even thought information) which cannot be simply attributed to physical fields. Although because biological matter contains physical components, biological fields are related to physical fields (such as electromagnetic fields). Because different fields have different qualities, the information carried on human body fields and the forms of information carried, its effect on other matter (non-biological and biological, its existence and transmission forms all can be in nature different from physical fields in general. It is worth noting that Qi not only passes through the inside of the human body, but it can also be far separated from the human body. Also, in principle, there is no reason why it cannot be spread out in limitless space. The "external Qi of QIGONG" can generally be believed to travel through "human body fields" outside the human body. It can include the Qi of many different levels, and its composition is very complex.

Finally, the most interesting point is that when people attempt to use synergetics to specifically process the giant system of the human body using the hypothesis of the duality of the "solid body one field" as the basis, under certain simplifications, compared to laser principles, they discovered that if the "solid body" of the various subsystems of the human body were made to correspond to the atoms "dipoles" of a laser, from the "fields" corresponding to the electromagnetic fields (primarily electrical fields), then it was possible to see that the fields of the human body were just like the electrical fields of the laser, in that they played a role in "ordered parameters" of the human body. According to the "principle of dominance" in synergetics, "ordered parameters" play a role in the prioritization within the system. This may be where the superiority of Chinese medicine which emphasizes "Qi" lies. Under certain conditions, the natural light generated by lasers can be highly ordered and become light which contains several special characteristics (high

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intensity, yet highly directional, monochromatic and coherent. Under certain conditions, the "QI" of the human body can also be highly "ordered", becoming a "human body laser light" with several specific characteristics (naturally, the term "laser light" is used incorrectly here). Delving deeper from here, we can gradually approach the principles of strengthening of the body and improvement of health, improvement of intellect and several other functional phenomena of QIGONG. Naturally, laser light is only a simple giant system, while the human body is an extremely complex giant system. Simple comparative operations can give us some clues that we still have a long road ahead of us in uncovering the mysteries of the human body.

III

The most important question along this road is the question of what role does consciousness play in the human body. In the hypothesis of "duality", consciousness falls within the range of functions. Therefore, it should fall within the "god" of "spirit, QI and god". Naturally, lasers do not have the consciousness of man, but lasers do also have functions. This is to utilize the energies induced, and finally to transmit out highly ordered electromagnetic fields. From this definition, lasers also have "god", and are the functions of "spirit" (dipoles), and "QI" (electrical fields) and "god" (absorbing unordered energy and transmitting out ordered electromagnetic fields). Naturally, compared to the human body or any other biological system, lasers are much more simplistic.

Using the term "god" to refer to the functions of the human body is consistent with the Chinese medicine concept that "god is the manifestation of life activities of the human body"⁷. The so-called "he who gains god will prosper, and he who loses god will die" is not referring to having any external "god" governing the human body, but is merely relatively speaking, that biological systems with a healthy functional life force will thrive, and those without this healthy functional life force will weaken and even die.

Of these functions of the human body, the ones worth noting are the human spiritual consciousness and thought activities. These types of functions are a knowledge of right and wrong and are a high level god. Because these human functions are highly developed, they can be said to be "the difference between man and animals".

The material basis of spirit, consciousness and thought is primarily the brain. Man has a highly developed brain, and therefore, he has a highly developed "god" (Chinese medicine differs from Western medicine not only as believing that the brain is "a seat of power without a god", but also emphasizing that the functions of the heart, liver, kidneys and brain are all related). From the viewpoint of "duality", the concept that potential of the human brain can be estimated to have 10 to the eleventh

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power or 10 to the fifteenth power switches falls far short. Corresponding to the complex cellular structure of the brain, the brain has multiple levels of fields (and definitely not just the brain electrical field and the brain magnetic field). The "two in one" function of cells and corresponding fields is not only far from what E. Cleweti of IBM said that is the equivalent of ten to the power of twelve one billion bytes per second computers in series to form a computer network^a, (this type of comparison merely reflects the machinery of the electronic age, but it has made a deep impression, that there is much more potential to the human brain).

However, it makes a good deal of sense to refer to computers as "electronic brains". This is because receiving, storing, processing and utilizing information is a major function of the human brain. The difference is that the functions of the electronic brain are given to it by man, and it is under the control of man. Conversely, the human brain is the product of long term evolution of biological material and it has these capabilities of itself. In addition, the form of information, the content, the material form in which the information is carried and the corresponding time form of the electronic brain are all much more simple than those of the human brain. Furthermore, from the viewpoint of the "duality" and the "multiple layer structure" of the human brain, the information of the human brain is much more complex than that carried on a magnetic tape. We need only look at how complex the signals carried by the electromagnetic waves broadcast by a television station to realize how difficult it is to even imagine how many types of information, how much information and how complex the information carried by the fields of the human brain or "brain waves".

If the receiving, processing "including processing, storage and retrieval" and the utilization of information as well as the information which has been processed is called "consciousness", and we remain aware of the "duality" of the brain and the complexity of the information with which the functions of the brain are concerned, we can explain a number of complex spiritual and conscious phenomena as well as the relationship between spiritual, consciousness, and the brain. Here, the important point is that because of the complex stratified structure of "spirit" and "QI" in the brain, the consciousness functions of the brain cannot be simply reduced to physical and chemical or even biological functions. Second, the information of which we are currently aware is all carried on material carriers. Therefore, the information processed by the brain and which can be retrieved, stored and utilized should exist in the form of many structured material systems, and these material systems can react on the brain. In actuality, "information", in certain aspects, can be defined as knowledge of things through a certain time space structure of matter. If the primary mutual effects are not energy of material carriers, but are time space structure of carriers, then we can ignore its energy and believe it is a type of "spirit" or consciousness. Therefore, human spirit and consciousness effects on the brain are a type of self acting of the human body. However, this type of "self acting" cannot be

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divorced from the environment, because the information received by the brain comes from the environment of the human body, which includes the internal environment and the external environment. Furthermore, the external environment includes the natural environment and the social environment. This is the third major point of the function of consciousness.

Starting out from these considerations, as an example, we can discuss to some extent the seven emotions of Chinese medicine. According to the categorization of consciousness into "knowledge, emotion and intent", "feelings" fall into the realm of "emotions". They can be viewed as information which has effected consciousness (it is also a series of physiological and psychological reactions brought about by information, a type of "god". Because "spirit, Qi and god" are three parts of a whole, the "spirit" and "Qi" of the various internal organs are different, and their "god" is also different. They react differently to different information. It is easier for certain information to be received by or to cause a reaction in certain internal organs. This type of information is the main emotion of that internal organ. If this information is too intense, it may cause damage to the corresponding internal organ.

The thought control "thought induction" "ideas", "concentration" of QIGONG all fall within the range of "thought" in the consciousness category. According to the discussion earlier, "thought" is also a type of information which is processed by the brain, and it must naturally have carriers. When these are retrieved and utilized, they can change the "Qi" or field status of the brain, so they use the Qi or fields of the brain as carriers. This type of carrier which has a thought information field can be called a "thought field". "Concentrating" on a certain place is much like using a certain information to effect a certain place. "thought induction" is the movement of the portion effected by the "thought field". "Ideas" are also the utilization of a type of information. For example, "Ideas of lotus blossoms" is nothing more than plucking out "lotus blossom" information out of the brain, allowing it to effect one's own body. "Concentration" and "ideas" both are effects of a type of thought field on the body itself. Because they can cause changes in the state of the body, they can also be called "thought forces". The effects of "thought forces" outside the body may be fairly complex. As an example, a group of students are playing on the exercise yard, and the teacher blows a whistle and the students all gather together. This is the thought field of the teacher acting on the nervous system to control the whistle to carry this information on sound waves to the students, causing a change in the state of activity among the students. This is the thought field using a known material form (nerves, sound and light) to effect others. This type of situation is visible all around us, and there is nothing strange about it. However, if the material form carrying the information is not a simple physical field, but is some unknown or undetectable material or material form, then it seems mysterious. Because of the reasons given above, the field components connecting human brains may be extremely complex, and they may have some qualities which are far from human

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understanding. Because of this, in some of the QIGONG phenomena, the ability of the practitioner of QIGONG to use his thoughts to affect others or other material in the outside world cannot be simply denied. This type of cases should be carefully researched to prove their veracity.

As for the problem of "god", especially the problem of consciousness, it involves a wide range of aspects. It can be said to involve all aspects of human life. Therefore, it has always been a basic problem of philosophy. Here we will only take it to be a specific problem of somatic science for some preliminary unsophisticated exploratory discussions. The examples we raise are rough, but we hope that they will attract additional study.

The human body is a giant system composed of the three parts of spirit, QI and god. "Spirit", "QI" and "god" are three parts and not one. This explains that they are different. In therapy, Western medicine emphasizes "spirit" and Chinese medicine and QIGONG emphasize "QI". Chinese and Western psychology both emphasize "god". However, in some way or another the "three parts" are "one body". This complex giant system of three parts in one body also is connected with the environment and the universe to form a super complex giant system. It is the task of somatic sciences to fully absorb all ancient and modern, Chinese and foreign culture and education to uncover the relationship between the nature of this giant system and the super giant system of the universe and to promote the development of the civilization of mankind through this process.

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OUR OPINIONS ON PARAPSYCHOLOGICAL FUNCTIONS

BY: J. B. Hast

From the British "Nature" magazine: In the past 18 months, the scientific world has once more come up against some newly proposed viewpoints. These are that certain people have super natural abilities, including having the ability to cause changes in the physical properties of materials. Many scientific laboratories have attempted to achieve this clear ability.

What sort of attitude should be adopted when testing these viewpoints? First of all, J. B. Hast, D. J. Bomu (phonetic), E. W. Beising (phonetic) and B. Aolege (phonetic) will introduce the progress in their recent work at Kenbeike (phonetic) college at the University of London. Then J. G. Taile (phonetic) of Queens College in London, the author of a book on paranormal abilities about to be published, will review the philosophical ideas involved in the work he has done.

In February of 1972, We contacted Mister Youli Gaile (phonetic). In addition to taking part in the school activities of the children, we also were able to observe telekinesis phenomena during the four terms of an entire year. We have already prepared a simple observation report for those persons who are interested to read. The viewpoints proposed include: Plasticity in metals was produced in a supernatural way. Some monocrystals wrapped in vanadium calcite film clearly disappeared. We and some witnesses hired by "Nature" magazine all very clearly believe that this topic which has historically been inconsistent and full of holes has not been fully explained in the descriptions in our report. We believe that we have made some important progress. The experience we have gained may prove useful to physicists who, like us, are interested in the mutual effects between the brain and the body.

We finally recognize that in this field, the circumstances of the experiments in certain key methods and in some scientific tests are different from the common and ordinary. This is because the test subjects studied must have been produced by the brain of one or more participants. Therefore, the relationship among the participants plays a much more basic role than in ordinary traditional scientific fields. In the experiments, it is necessary to consider the personal relationships among these people, just as the interpersonal relationships must be considered in the principles of psychiatry and medicine. However, this naturally did not require us to believe in parapsychological functions from the very start. To the contrary, we were prepared to accept all possibilities. Our objective was very simple. To explore the veracity of these parapsychological ability phenomena. Actually, there served to eliminate many doubts. In this type of work, it is very natural to generate some doubt. Even so, in addition to being careful in this aspect, we also

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needed to be sensitive and good at observation. We did not want to handle this with a predisposed mind, which would influence our perception and destroy the possibility of the phenomena we hoped to study. We attempted to use appropriate insight and observation to develop a type of method which would give full consideration to interpersonal factors and permit us to conduct effective scientific research.

When people observe phenomena, one of the first problems which occurs is that telekinesis phenomena normally only occurs when the subject is placed in a relaxed state. The nervousness, fear and forced spiritual state of some subjects was generally transmitted to all the others. When all of the participants were very active and tried to do a good job, the overall process developed very smoothly. In addition, when the testing shapes were artistic and very imaginative, it affected those with parapsychological abilities and everything seemed to develop much more easily.

We also discovered that in general, it was very difficult to generate a batch of phenomena on precognition. Although it could be done at times, what happened often was startling and surprising. We have already noted the high degree of concentration in order to obtain the desired results (for example: bending a piece of metal), but the total concentration also resulted in the destruction of the relaxed mental state required for this phenomenon. It may be believed to actually be primarily an unconscious function of the brain. However, when we made a fixed determination of what we wanted to do, the conscious functions of the brain was often more of a hindrance than a help as far as our objectives were concerned. At times we actually discovered that it was helpful to talk about or think about things which were not closely related to what was about to happen. This would cause a reduction in the tendency to over concentrate on the predetermined goal of the experiment. This might be similar to the process when going to sleep, this process required determination, but continuous effort.

Many of the circumstances described above would not have been possible without the successful research within the natural sciences. Therefore, if the persons who were to take part in the physics experiment were nervous or unwilling and did not really want to do the experiment, then the chance of success would be greatly reduced. Similarly, the infectiousness of the beauty of the test apparatus would help maintain interest and enthusiasm, while a constant testing would weaken this attitude and finally destroy the entire operation. In the study of telekinesis, the conditions described above are clearly much more important than in natural science, because the persons producing these phenomena are not instruments or machines. Any attempt to turn a man into an instrument or a machine will undoubtedly lead to failure. On the other hand, as we have stated earlier, they need to be viewed as a member of the testing group, to actively participate in the experiment, and not be treated as outsiders.

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The following analogy may be helpful in providing a more standardized overall description of phenomena in this field. For example, there is a person who is paralyzed because of nerve damage. If this person wants his hands to regain their functions, he must find some way to grow new nerve channels. How should he do this? He does not know. He tries his best and makes clear just what the possibilities of movement are, and to concentrate and carefully observe just what movement occurs. He can not describe or even imagine what he is doing to make his hand move. In addition, he cannot produce any controlled movement at first which results in a consciously predicted result. It is fairly clear that it is a random and chance unconscious function of the brain leading to a connection between the brain and the hand. If he continues his interest and exercise, he will often discover that his movements are moving toward approaching his preset goals. However, it should also be pointed out that if people around him believe it is impossible for him to move his hand or there are antagonistic feelings which make him nervous, then it is not very likely that he will be able to continue the necessary interest and activity to move his hands.

People working with this type of paralyzed person (such as a therapist) obviously cannot oppose the view that "he can move his hand". The view of the paralyzed person and the view of his co-workers are two major factors leading to success. The persons concerned must admit to the possibility of the maximum success, and at the same time, continue to test for the recovery of health, and not restrict it to certain results over certain periods of time. Although the methods used are different from traditional methods used in natural sciences, reliable results can still be achieved in therapy.

The similarity between this and research into telekinesis is fairly obvious. The major difference between them is: We can illustrate and to some degree explain the connection between the hand of the paralyzed person and his brain (connected by nerves). However, with present day scientific knowledge, we are unable to illustrate or explain the connection between the brain and the object moved or bent. However, if we imagine that at the present time there are several unknown binding forces, binding energy or binding method, then we could also hypothesize that telekinesis is effected by using some kind of force similar to the force of moving the hand. Then there would be those who believe there might exist some type of unconscious "grouping" connection. In many situations, there exist a type of visible feedback which can allow a person to be aware of what he is doing. Furthermore, this feedback allows him to strive to continue along that same route which cannot be described and cannot be determined. However, it is possible that there are other forms of feedback which exist. If a piece of metal can cause a reaction in the brain through some unknown method, the brain similarly may be able to cause a reaction in the metal, and even if the people concerned are completely unaware of the object involved, because they are consciously

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aware of this reaction, they can say what they were feeling at what time.

Before people consciously consider their own observation of phenomena, they should not stress a theoretical explanation of the possibilities. This point is very important. For example, when the effects of magnetism and the effects of static electricity were first discovered, it could not be expressed as known forces, and these known forces could only be considered when there was dynamic contact with the object. This did not hinder the detection of these effects. The primary objective of this type of observation was to derive a reasonable explanation for this type of phenomena. This expression was first qualitative and only later quantitative. For example, the first qualitative observation was that like charges repel and different charges attract. Later, quantitative measurements found that the force was inversely proportional to the square of the distance. On the basis of this expression, it was developed into the explanation of the theory of electromagnetic field for electromagnetic phenomena. As for telekinesis, we propose a similar avenue of exploration, and so far we have done our best to carry out this principle.

In this type of research, there must be an atmosphere of mutual trust. We should not use a jaundiced eye to turn persons with paranormal abilities into test objects. On the other hand, as I have said earlier, we must view them as our fellow workers. Just imagine everyone staring at a coworker, afraid that someone was going to trick them. Under such conditions, it is very difficult to conduct a physics experiment. How, then, should we avoid the possibility of trickery? It is possible to design a type of test equipment with superior capabilities to make trickery impossible. Magicians in general also believe it should be done this way. In the first stage of our work, we gave quite a few of these pieces of equipment to Mister Gaile (phonetic). However, these pieces of equipment were not aesthetic and did not catch his attention. In all the failures from the beginning we discovered that when we placed a number of possible objects together on a piece of metal and gave them to him, at least one object would catch his attention and cause a spiritual flash. Next, we would pick up this apparatus which included two plastic bags. Each plastic bag also had a thin vanadium calcite monocrystalline chip. When Gaile (phonetic) placed his hand near them, there would be obvious visible changes to the chip in one of the bags.

In our discussions with magicians we discovered that it was the best time to do tricks when there was something eye catching going on. In the examples above we felt that the situation was like this: The importance of the problem was not that it could occur at the exact time under observation or taping, because it was impossible to know the method of this effect inside the sealed plastic bag. so there is no possibility of a switch. Because of this, we reached the conclusion that this is not a magical trick.

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Even so, we still realize that the things we are discussing here are easily accomplished by magical tricks. We also know that we are not experts on magic. Therefore, if any intention of trickery existed, we, like everyone else, would be easily duped. Furthermore, there are a number of opinions which stress the possibility that this is a trick. Therefore, there are often people who propose having a skilled magician assist in the observation to ensure there is no possibility of trickery.

However, very naturally, this type of insurance is in actuality impossible. This is because every new sight is an oddity and often appears in a surprising manner. A gifted magician can always take advantage of it. The tricks are not always the same, but continuously changing and developing. Therefore, at the most a magician will say he does not know how to do the trick to do an entirely visible effect. Naturally, if several recognized skilled magicians were to reach a conclusion that under certain circumstances there was no trick to what was performed, it would help produce a judgement that accepted that paranormal ability phenomena are real. We welcome in principle this sort of assistance in reducing the possibility of trickery. However, we have observed that magicians often harbor a certain wariness toward the overall intentions of this sort of investigation which causes them to tend to create a tense atmosphere. In this sort of atmosphere, no one can do anything. Actually, if there were few magicians who were not this way, this would not allow their thoughts to cause those magicians who were doubters to believe, because these prejudiced magicians hypothesize new tricks of a complexity which exceed the ability of these special magicians to see through. It is because of this that even though we discovered that it was very useful to receive advice from these magicians, it seems impossible to make significant progress on the resolution of this special question by having magicians present. We already learned in this sort of consultation to carefully examine the identified materials, carefully study the process from the time it reaches the hands of the person being tested until the material begins to bend. We are familiar with the effect of slight movements of a persons hair, we are aware of the corrosive effects on metals of mercury salts in alcohol and we know that metal softens by being bent back and forth. We know that there are some real difficulties existing in answering the criticism of looking for the possibilities of trickery. We also know that certain fairly strong doubts are appropriate on this point as they are about some articles. If the scientific world does not first react in this manner, then it would be inappropriate. However, we believe our research can adapt to this.

In some experiments, the conditions must be controlled so the possibility of trickery is very slight. This point is very crucial. Metal bending experiments are especially suited to this type of research. Although as of now we have only been successful in using materials wrapped up in a plastic bag, but this type of material can play an important role.

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We feel that if similar work continues, similar examples will continue to pile up, and undoubtedly there will be new advances. Furthermore, it will not be possible to illustrate or explain the new advances using current laws of physics. Actually, we feel that we have already made a fair amount of progress while adhering to continued and further research in this area. We hope that even more experiments will be conducted and that when there are successes they will be reported.

It is not easy to tell exactly where the line is where scientists must stop and become magicians.....

Every scientist must ask himself if he is willing to find out the truth about paranormal ability phenomena (bending spoons, mental telepathy and seeing through solid objects). The question is how to do this scientifically. There are a number of people who claim that the unique elusive character of paranormal ability events are a barrier to the conduct of this sort of investigative research. There also a number of people like us who feel that these strange phenomena are related to their world view, and therefore are worthy of careful study. When our curiosity about these type of thing is satisfied, must we take off our scientist lab coats? When beginning to answer this question, we can say that if the answer is affirmative, then the elusive phenomena cannot be an appropriate scientific subject. From this view point, if we take the quark as an example, it will exceed the scope of science. In order to avoid such absurdities, we must look at a murky continuous interval existence. It is not easy to tell exactly where the line is where scientists must stop and become magicians.

However, the properties of any phenomenon are all studied by science. This is the repeatability that allows researchers to observe the event at individual different times. This not only allows for the extremely sympathetic properties of scientific research and most important, it permits even more thorough research on subjects concerned. It is only at this time that it will be possible to begin to view this event with popular views. In this manner, the effective and modelling processes may be conducted one after the other or almost at the same time.

On this point, the repeatability of paranormal ability phenomena must be clarified, because they seem to signify different things to different people. They are used in the following concepts. Imagine an event like a small child bending a spoon, which has already occurred a number of times under certain conditions. Each time the child is tested, the bending phenomenon may not occur. Perhaps some major factor under conditions of which no one is aware have changed from one test to the next. If the spoon bending phenomenon (or any other conditions) occur in a small amount of the tests and the large number of tests have convinced people that the paranormal ability phenomenon will continue to occur at the same rate, then the paranormal ability even can be viewed as repeatable. One of the

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major difficulties in applying this principle is how to describe the exact environment under which the event will repeat itself. Because the presence of certain objects and people will add to the psychological pressures of the subject. It is necessary to go through troublesome trial and error before a suitable environment is found. However, these problems do not cause disappointment towards achieving repeatability in paranormal abilities. It is especially important not to expect the test subjects to be able to generate paranormal events at each testing and under all conditions. This is like expecting the same particle beam to be generated by the acceleration tunnel no matter what the vacuum level is or what energy level is used. This type of machinery is so precise that it can only work under very specific conditions. Because we deal with those even more complex mechanisms of the human body, when studying paranormal abilities we must be very careful about this.

In order to be able to further study the phenomenon of paranormal abilities, it is very necessary to allow them to occur under suitable restricted conditions. If the spoon bending is possible and while the spoon is being bent, the test object cannot be directly observed, even though it is repeatable, a number of explanations, to include a clear explanation is still not possible. In summary, it is obvious that the conditions must be selectable in order to eliminate the naive explanations, especially those of tricksters, for paranormal abilities.

We are caught up in the final conflict between the strictness of science and the clearly required relaxed state necessary for the generation of paranormal abilities. The bending of spoons and long range observation in the light of day, because these phenomena have a certain degree of repeatability in daylight. Also, the witching for water paranormal ability phenomenon deserves further study so each explanation is tested.

It is this special nature that permits crucial testing that is absolutely necessary for the scientific study of the phenomenon of paranormal abilities. The scope of the series of tests conducted will naturally be randomly conducted by the researchers. However, this is the measurable thing which exists in paranormal ability events themselves. We need not further investigate to prove that the testing is easy, because this involves certain aspects of changes in the environment. Also, the environment can often prevent special phenomena from recurring. If this sort of change is very detrimental to paranormal ability phenomena, then its testing is absolutely impossible. Paranormal ability events will then be viewed as paranormal events, and the people of today's world will not be able to effectively conduct scientific research on them.

When attempting new testing of a subject, it is possible that paranormal ability phenomena will not occur at first, but after several attempts, they will later appear at a certain stage. Under these conditions, the researchers must clearly have patience, and they must be

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this way, otherwise there will be a shortage of knowledge on the study of paranormal ability phenomena. It is very necessary to systematically and gradually conduct this work, no matter what, this strange phenomena must be accurately described in order that it may obtain effective proof and it is possible to begin to hypothesize about its possible explanations. It is especially necessary to use extremely strict testing so that trickery cannot be taken as a cause of paranormal ability events. In this way further investigation of paranormal phenomena can be achieved.

In the past two years, quite a few researchers saw the example of the bending spoon. These explanations are valuable, and even though they are based on the principles described above, they are still non conclusive. It is only through the careful measurement of the various physical parameters, especially the pressures applied, during the bending process that it is possible to list it in the category of paranormal abilities. It would be best if these measurement processes could be carried out automatically, and certain preliminary tests with positive results have already arranged this sort of measurements. People have already attempted measurements of various parameters such as temperatures and various types of radiation. In these attempts at measurement, it is necessary to allow the subject to be as relaxed as possible and at the same time, prevent any laxity in the scientific strictness.

Because of the preponderance of observers with a doubtful attitude, in order to prevent psychological pressures due to the presence of doubtful observers, the best method seems to be to use automatic measurement instruments whenever possible. In this way, the research personnel can focus their attention on the subject's psychological state and not have it divided between with half of it on keeping the subject in a relaxed state and the other on careful observation of the events that occur. Here, movie film and audio film are not as useful as people think. This is because they can only provide a one sided picture of the changes of events. They cannot monitor the amount of such changes as pressure and the critical magnetic force.

Finally, we should also mention those persons with a doubtful attitude. When they are present, the paranormal phenomenon may fail to occur or they not observe the paranormal event and feel that paranormal phenomena are impossible. Although doubter's prejudices toward paranormal events and have extreme reactions. However this sort of critical attitude plays an important role in science, and even ensures that the principle of strictness in science plays a positive role. However, an extremely doubtful attitude toward the progress in the field of paranormal abilities acts as a hinderance. The solution of this problem is determined by what kind of proof will be accepted by those who doubt. This answer to this question is determined by each of those with an attitude of deep distrust. People can recognize certain general characteristics of this view.

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The most extreme doubters remain unmoved by any paranormal abilities phenomenon they face because of their attitude of doubt. This type of stubborn unchangeable attitude can only go with decay and death. Let us look once more at the doubters who are a little better. The demand to see firsthand phenomena because in their view this phenomenon seems to be impossible. Furthermore, even if when they see this phenomenon, they may claim: There is still some trickery in the phenomenon. We must ask him to observe this type of phenomenon under conditions of strictest possible methods. To be successful with him, it will take time and patience. If he can be influenced, it is only if we are willing to spend the time and patience that it will be possible to have him observe the phenomenon that will convince him.

Here we have already hypothesized that we can obtain the conditions where trickery is impossible and where paranormal ability events can be measured. Some people believe this is not the case. This view is very clearly false. It is possible to eliminate all conditions of trickery. A piece of metal equipped with a pressure sensor cannot be bent without anyone being aware of it unless the sensor is not working. If the method of bending is not mechanical, and is chemical or laser beam methods, it is only necessary to carefully conduct chemical analysis or measure the temperature and it will be possible to compare the results. Conventional methods cannot cause an object to bend without contact.

At the present time it is not possible to allow this sort of non believer to observe the detailed experiments by the extremely small number of persons with obvious paranormal abilities. It seems that a small portion of them cannot do this. In order to affect this doubt of theirs, it is necessary to know just where they are coming from. The scientific doubt concerning paranormal abilities is based on this fact, that the paranormal ability events studied are in conflict with current scientific views. At least, this is said to be a fact which is applicable to every paranormal ability event. However, differences exist between the different sorts of paranormal ability phenomena.

First of all, odd events which exist seem to be impossible in the eyes of science, however, actually, if people all believed that current fields still were lacking a certain knowledge, perhaps in the future it would be possible to come up with a scientific explanation. Here we raise the example of bending a spoon once more. Recently some people proposed a theory of electromagnetism to explain it. In order to test it well, it is necessary to consider study of super low frequency electromagnetic radiation energy and the effects between it and various materials - to the degree where the material is cracked. It has only been recently that this new property of material has been discovered and proven this hypothesis. Furthermore, the measurement of the instantaneous magnet field in this process is related to the stress fracture of the various materials. As for telepathy and long range vision, the same hypothesis can be proposed. A small group of recent achievements from Stanford research indicates a

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radiation at the upper limit of extremely high frequencies and yet also includes low frequencies. Since low frequency electromagnetic radiation has already been shown to effect the psychological parameters of animals, then, this sort of electromagnetism hypothesis must be considered. Other physical phenomena are even more difficult to understand using this type of special shop talk. Therefore, if objects can actually disappear from inside a sealed container, then the energy required to eliminate its chemical bond would be very great and impossible to provide a feasible physical explanation with current special terminology. This type of phenomena cannot be proven just like the bending of spoons and telepathy. Therefore, there also exists the possibility that moving objects do not always disappear at one place and appear at another place. However, if this is the case, it is very obvious that this would be in contradiction with the current scientific view of natural forces and the laws they satisfy, especially with the law of the conservation of energy.

Similar difficulties occur in other paranormal ability phenomena such as precognition. It is difficult to categorize as a normal cause and effect relationship. Normal cause and effect relationships use the explanation of retarded potential as the formula for the fields of all energy. However, when the retardation effect only occurs when people are present, this is very strange. It is very natural to consider that awareness is very necessary in these phenomena.

Finally, if researchers are patient and intelligent with everything, including the test subjects and their colleagues, the truth about paranormal ability events should be found. In their experiments, they must aim at the highest level of scientific strictness. However, while having the subject meet fairly scientific conditions, before causing the paranormal ability events to occur, he must also use a great amount of time to prepare. In addition, researchers must work hard to establish a fairly feasible model for paranormal ability events. If all advances were smooth, they would have fairly great advances in obtaining this effect.

Translated by Qian Shencen and Dushenshou from NATURE Magazine of 10 April 1975.